What is claimed is:

1. A biosensor comprising:

a sensing volume comprising an array of pores sized for immobilizing within said pores a first biological entity tending to bind to a second biological entity in such a manner as to change an index of refraction of said sensing volume;

a ring interferometer, one volumetric section of said ring interferometer comprising said sensing volume;

a laser for supplying light to said ring interferometer;

a photodetector for receiving light from said interferometer.

2. The biosensor of Claim 1 wherein said array of pores comprises nanometer-sized pores.

3. The biosensor of Claim 1 wherein said array of pores comprises Sol-Gel.

4. The biosensor of Claim 1 wherein said first biological entity comprises an antibody and said second biological entity comprises an antigen that binds to said antibody.

5. The biosensor of Claim 1 wherein said first biological entity comprises a printed polymer and said second biological entity comprises an antigen that binds to said printed polymer.

6. The biosensor of Claim 1 wherein said first biological entity comprises a first DNA or RNA strand and

said second biological entity comprises a second DNA or RNA strand that is complementary to the first strand.

7. The biosensor of Claim 1 wherein said ring interferometer comprises:

a first optical path between said laser and said photodetector;

a second optical path that includes said one volumetric section comprising said sensing volume, said second optical path comprising a closed recirculating optical path, said second optical path being coupled to said first optical path whereby said first optical path receives light from said laser unaffected by said sensing volume and light that has passed through said sensing volume.

8. The biosensor of Claim 7 wherein said second optical path includes said first optical path.

9. The biosensor of Claim 7 wherein said second optical path is separate from said first optical path and is coupled to said first optical path by evanescent coupling.

10. The biosensor of Claim 1 further comprising a synchronous detection control circuit enabling said photodetector in synchronism with a burst mode transmission of light in said ring interferometer.

11. The biosensor of Claim 7 wherein said first and second optical paths comprise respective waveguides.

12. The biosensor of Claim 11 wherein said respective waveguides are formed on a monolithic substrate, said

respective waveguides comprising mesa rib structures on said substrate.

13. The biosensor of Claim 12 wherein said first optical path is along a straight line and said second optical path comprises a closed recirculating path.

14. The biosensor of Claim 13 wherein said closed path comprises plural straight paths defining a polygonal shape.

15. The biosensor of Claim 13 wherein said closed path lies along a circle.

16. A biosensor comprising:

a sensing volume comprising an array of pores sized for immobilizing within said pores a first biological entity tending to bind to a second biological entity in such a manner as to change an index of refraction of said sensing volume;

units of said first biological entity immobilized in respective ones of said pores;

a ring interferometer, one volumetric section of said ring interferometer comprising said sensing volume;

a laser for supplying light to said ring interferometer;

a photodetector for receiving light from said interferometer.

17. The biosensor of Claim 16 wherein said array of pores comprises nanometer-sized pores.

18. The biosensor of Claim 16 wherein said array of pores comprises Sol-Gel.

19. The biosensor of Claim 16 wherein said first biological entity comprises an antibody and said second biological entity comprises an antigen that binds to said antibody.

20. The biosensor of Claim 16 wherein said first biological entity comprises a printed polymer and said second biological entity comprises an antigen that binds to said printed polymer.

21. The biosensor of Claim 16 wherein said first biological entity comprises a first DNA strand and said second biological entity comprises a second DNA strand that is complementary to said first DNA strand.

22. The biosensor of Claim 16 wherein said ring interferometer comprises:

a first optical path between said laser and said photodetector;

a second optical path that includes said one volumetric section comprising said sensing volume, said second optical path comprising a closed recirculating optical path, said second optical path being coupled to said first optical path whereby said first optical path receives light from said laser unaffected by said sensing volume and light that has passed through said sensing volume.

23. The biosensor of Claim 22 wherein said second optical path includes said first optical path.

24. The biosensor of Claim 22 wherein said second optical path is separate from said first optical path and is coupled to said first optical path by evanescent coupling.

25. The biosensor of Claim 16 further comprising a synchronous detection control circuit enabling said photodetector in synchronism with a burst mode transmission of light in said ring interferometer.

26. The biosensor of Claim 22 wherein said first and second optical paths comprise respective waveguides.

27. The biosensor of Claim 26 wherein said respective waveguides are formed on a monolithic substrate, said respective waveguides comprising mesa rib structures on said substrate.

28. The biosensor of Claim 27 wherein said first optical path is along a straight line and said second optical path comprises a closed recirculating path.

29. The biosensor of Claim 28 wherein said closed path comprises plural straight paths defining a polygonal shape.

30. The biosensor of Claim 24 wherein said closed path lies along a circle.

31. The biosensor of Claim 16 wherein said first biological entity comprises a first RNA strand and said second biological entity comprises a second RNA strand that is complementary to said first RNA strand.